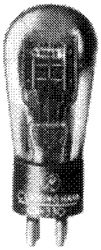
Cunningham RADIO TUBES

CX-330



DETECTOR, AMPLIFIER

The '30 is a detector and amplifier tube of the three-electrode type. It has a coated filament which takes as little power as possible consistent with satisfactory operating performance. This feature makes the '30 particularly suitable in battery-operated radio receivers employing the '32, '34, '31, and/or '33 where economy of filament current drain is important.

CHARACTERISTICS

Filament Voltage (D. C.)			2.0	Volts
Filament Current			0.060	Ampere
Plate Voltage	90	135	180 *max.*	Volts
Grid Voltage	−4.5	−9	−13.5	Volts
Plate Current	2.5	3.0	3.1	Milliamperes
Plate Resistance	11000	10300	10300	Ohms
Amplification Factor	9.3	9.3	9.3	
Mutual Conductance	850	900	900	Micromhos
Grid-Plate Capacitance			6.0	μμf.
Grid-Filament Capacitance			3.7	μμf.
Plate-Filament Capacitance			2.1	μμf.
Maximum Overall Length				4¼"
Maximum Diameter				1 9/16"
Bulb (See page 42, Fig. 6)				S-12
Base				Small 4-Pin

INSTALLATION

The **base** pins of the '30 fit the standard four-contact socket. The socket should be installed so that the tube will operate in a vertical position. Cushioning of the socket in the detector stage may be desirable if microphonic disturbances are encountered. For socket connections, see page 39, Fig. 1.

The coated **filament** of the '30 may be operated conveniently from dry-cells, from a single lead storage-cell, or from an air-cell battery. For dry-cell operation, a filament rheostat may be used together with a permanently installed voltmeter to insure the proper filament voltage. For operation from a 2-volt lead storage-cell, the '30 requires no filament resistor. Operation with an air-cell battery requires a fixed resistor in the filament circuit. This resistor should have a value such that with a new air-cell battery, the voltage applied across the filament terminals will not initially exceed 2.15 volts. *Series operation of the filaments of these tubes is not recommended.*

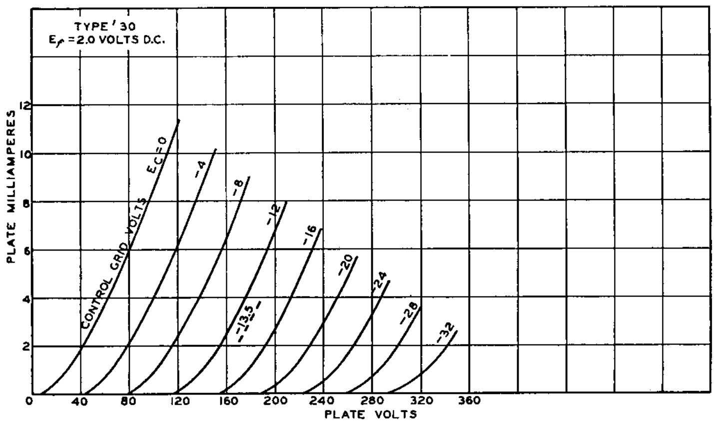
APPLICATION

As a **detector**, the '30 may be operated either with grid leak and condenser or with grid bias. The plate voltage for the former method should preferably not be more than 45 volts. A grid leak of from 1 to 5 megohms used with a grid condenser of 0.00025 μf. is satisfactory. The grid return should be connected to the positive filament socket terminal. For grid bias detection, plate voltages up to the maximum value of 180 volts may be used. The corresponding grid bias should be adjusted so that the plate current is about 0.2 milliampere when no signal is being received.

As an **amplifier**, the '30 is applicable to the audio- and the radio-frequency stages of a receiver. Plate voltages and the corresponding grid voltages should be determined from the Characteristics and the curves in order to obtain optimum performance and freedom from distortion.

As an **oscillator**, this tube may be used at plate voltages not exceeding 45 volts.

AVERAGE PLATE CHARACTERISTICS



AVERAGE CHARACTERISTICS

